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20 June 1966

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Dear Sir:

Enclosed please find three (3) copies of our Seventh Monthly Letter Report on Evaluation (U), for the period covering 18 May 1966 to 20 June 1966, dated 20 June 1966. This report is being submitted under subject contract.

Sincerely yours,

25X1

ELB:dh
Enclosures

DECLASS REVIEW by NIMA/DOD

GROUP-1
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and declassification.

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SEVENTH MONTHLY LETTER REPORT ON EVALUATION (U)

1. Work for Reporting Period

During this past month we have modified the computer program to include twice as many data points as were previously available. This has resulted in significantly better correspondence between theoretical and experimental images of edges and "L" targets.

Other experimental imaging work has been done with fifteen bar square wave targets and sine wave targets obtained from . The square wave target is useful in determining the spatial frequency cutoff. Results obtained with this target show substantial agreement with the cutoff frequency values obtained by edge trace analysis. We are using the sine wave targets to obtain a measure of the non-linearity introduced at various spatial frequencies by the partially coherent illumination.

Theoretically we have obtained a result which shows from an ensemble average calculation that the measured values for the degree of coherence in the object plane were to be expected. The calculation shows that whenever the auto-correlation function of the roughness on the ground glass goes to zero in distances short compared to the size of the illuminated glass area and the standard deviation of the glass thickness variations is large compared to a wavelength, the ground glass will act as an effectively incoherent source.

2. Work for Next Period

We are presently obtaining photographs containing raster to use in our spatial filtering studies. Experimental work is also being done to test the validity and useful-

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ness of the low contrast approximation which makes partially coherent systems linear in intensity.

3. Visits from Contractor

On 23 May, [] to attend a program briefing with the []

[]

4. Progress of Work

As of this reporting date, approximately 69% of funds have been expended and 80% of the work program has been completed.